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Archaeological survey and testing of two proposed road projects within the Cedar River valley resulted in the location of several prehistoric occupational sites. Ceramics recovered at three of the sites, 13LN226, 13LN236, and 13LN243, are identified as late Middle Woodland period specimens, dating to ca. A.D. 200. The three sites border Cedar River tributaries, occupying high terrace formations within the broad bottomlands of the Cedar valley. The type and distribution of artifacts suggest that 13LN236 and 13LN243 functioned as repeatedly utilized, short-term extractive and processing camps. Previous research at sites of similar age focused on small, protected rockshelters and large, long-term "village" sites. The identification of field camps in the areas investigated provides a more complete picture of Middle Woodland settlement patterns in the Cedar valley. The ceramic type Spring Hollow Crosshatched is described, based on specimens recovered from several sites in the Iowa, Cedar, and Wapsipinicon valleys.
INDEX DESCRIPTORS: Middle Woodland Period archaeology, ceramic typology, eastern Iowa.

Several sections of the Cedar River valley in Linn County, Iowa have received archaeological attention during the past 60 years, providing much of the data upon which our understanding of the Woodland cultures of eastern Iowa is based (Figure 1). For example, investigations by Charles R. Keyes of the Iowa Archaeological Survey at rockshelter sites in the Palisades-Kepler State Park (Keyes 1943) yielded large amounts of Woodland period ceramics. The importance of the ceramic assemblages of these rockshelters was recognized by Wilfred Logan in his later analysis of the Keyes materials (Logan 1976), and Logan drew heavily upon local place names to introduce terms such as Linn ware, Spring Hollow Cordmarked, and Minott's Plain to the nomenclature of eastern Iowa ceramics. More recent cultural resource management studies revealed a high density of prehistoric sites within 2-3 km of the river. A survey of the proposed Pleasant Creek Reservoir resulted in the location of 99 prehistoric sites in the roughly 9 km^2 area surveyed (Weichman 1974), suggesting an average density of about 11 sites per km^2. These examples indicate that the potential for productive archaeological research in the Cedar valley should not be underestimated.

Recent investigations in the Palisades-Kepler State Park and Pleasant Creek Reservoir areas have provided new information regarding the nature of Middle Woodland settlement patterns and ceramics in interior eastern Iowa. These investigations suggest that Havana tradition occupation in the Cedar Valley was more complex than previously recognized, based on the recognition of field camps as part of the Havana tradition settlement system. The identification of a new ceramic type within the Linn ware series has also emerged from these efforts.

This paper will briefly review the evidence for Havana tradition occupation in terms of environmental context and settlement types, summarize the results of the recent research, and discuss the relationship of Havana and Linn wares with reference to the type Spring Hollow Crosshatched and in the context of eastern Iowa ceramic development.

HAVANA-HOPEWELL IN EASTERN IOWA

Questions about the nature of Havana-Hopewell occupations and influences in interior eastern Iowa have been addressed by several researchers. Logan (1976:177) noted the absence of "elaborate Hopewellian burial mounds or village debris" in Linn County. Anderson (1971a:4) likewise acknowledged only isolated finds of a few Havana series ceramics in the Iowa River valley, but no actual settlements. These finds prompted Anderson's (1971a:4) speculative proposal of the presence of a Havana-Hopewell related complex termed "Amana Havana" in east-central Iowa. Despite the lack of known site locations, the presence of this complex was perpetuated by Weichman and Hedin (1974:81), Weichman and Tandarich (1974:73-74), and Tiffany (1986:160, 163). Formal descriptions of the Neteler Stamped sherds depicted by Weichman and Tandarich (1974:Plate 2), on which the Amana Havana complex was based, have not been published, and the specimens have no known provenience other than the Amana area. While Havana-Hopewell sites in the Mississippi valley are well known, such sites in the interior of Iowa are considered to be few. The list includes several rockshelters along the Maquoketa River in Jackson and Jones counties (Logan 1976:76-86), a few central Des Moines valley sites, most notably the Boone Mound and Gracie Paulson sites in Boone County (Gradwohl 1974; Lensink 1968), and a number of mound and habitation sites in the Rathbun Reservoir (Brown 1967). Havana ware sherds have been found in the Red Rock Reservoir (Roper 1986:179) and elsewhere in southeastern Iowa (David Benn, personal communication 1989); however, further study is needed for a better understanding of the Middle Woodland components in these areas.

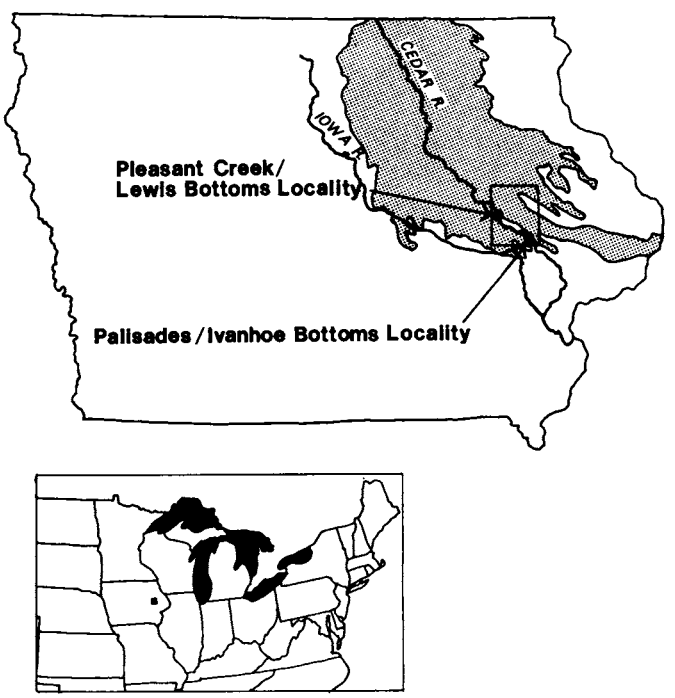

Fig. 1. Locations of study areas. Shaded area: Iowan Erosion Surface.

Gradwohl (1974:54) compared the Middle Woodland manifestations in the central Des Moines valley to "the better-known westward extension of Hopewell up the Missouri River to the Kansas City locality". Alternatively, Benn and Rogers (1985:40-46) classified the Middle Woodland occupations along the Des Moines River in Boone County as components of the Van Hyning phase, a Havana-Hopewell influenced cultural florescence developed by local populations. Van Hyning phase ceramics have been typed as High Bridge ware (Benn and Rogers 1985:Appendix B).

Robert Alex proposed an environmental model to account for the observed distribution of the known Havana-Hopewell occurrences, and for the general absence of such materials in the Iowa and Cedar valleys (Alex 1970; Tiffany 1986:165-166). Basically, Alex thought that the known Havana-Hopewell sites occurred in heavily forested areas with rugged, well-dissected topography, reflecting economic strategies based on forest resource exploitation. Alex characterized the topography of the Iowa, Cedar, and Wapsipinicon watersheds as subdued, and dominated by prairies rather than forests. Such areas were avoided by Havana-Hopewell populations. Instead, Early and Middle Woodland components in the prairie-dominated valleys of eastern Iowa contain the distinctive incised-over-cordmarked pottery identified by Logan (1976:89-91) as Spring Hollow Incised. Spring Hollow Incised was recently renamed Prairie Incised to divorce it from its dubious association with Linn ware and to establish it as the predominant ceramic type of the Prairie phase (Stoltman 1986, 1989; cf. Benn 1978). Munson (1986) considered the Prairie phase to be a regional expression of the Black Sand tradition, representing the material culture of populations located to the north and west of the Havana tradition heartland who produced a variety of incised-over-cordmarked ceramics. Recognition of the Prairie phase and the Black Sand tradition supports Alex's earlier interpretations concerning the nature of incised-over-cordmarked ceramics in eastern Iowa (Alex 1968, 1970, 1976).

Alex's environmental model suggests that populations associated with the Black Sand and Havana traditions in eastern Iowa occupied mutually exclusive territories (cf. Tiffany 1986:165), a conclusion that is not necessarily supported by the literature on eastern Iowa Middle Woodland investigations. Havana tradition components have been encountered in the Cedar valley, and the settlement system employed by the Havana-related population was more complex than might be expected under the model. For example, Alex apparently overlooked a 1946 Master's thesis by Lois Anna Grissell, a student of Keyes, based on surface collections and test excavations at the Bena site, 13LN141, located on a high terrace of the Cedar just southeast of Cedar Rapids (Grissell 1946). Grissell recovered several sherds that today would be considered typical Havana ware specimens. David Benn's 1974 and 1975 excavations at two multicomponent sites, the Young site (13LN133), and 13LN44, recovered a number of Middle Woodland sherds probably representing Havana ware (Benn 1976:45-52, 77-87; Benn 1987:73). Both the Young site and 13LN44 are located in the Pleasant Creek Reservoir in upland settings overlooking the Cedar River bottoms. The Havana ceramics at the Young site were associated with two Hopewell or Baehr ware rim sherds (Benn 1987:61-62), typical Middle Woodland corner-notched and stemmed projectile points, and flake blades (Benn with Thompson 1977), consistent with a Middle Woodland component that is clearly in the Havana tradition. Both the Bena and the Young sites have been identified as "village" sites, or perhaps more appropriately, residential bases (Binford 1980). Site 13LN44 may also be considered a residential base. Such sites may thus be expected in both terrace and upland settings.

Alex's 1967 excavations at the Rock Run Shelter, 13CD10, a rockshelter site located along Rock Run approximately a mile above its confluence with the Cedar River in southwestern Cedar County, yielded a Havana Zoned body sherd and several Havana Cordmarked specimens, along with ten incised-over-cordmarked sherds (Alex 1968:33-35). The Havana component at this site is limited, but it indicates short-term utilization of rockshelters by the Cedar valley's Havana tradition population. Havana ware and incised-over-cordmarked ceramics (Black Sand Incised) also co-occurred at the Levsen (13JK4) and Crabtown (13JK62) rockshelters in Jackson County (Logan 1976:81, Table 14). Although contemporaneous occupation of these rockshelters by Black Sand and Havana tradition populations cannot be demonstrated, the co-occurrance of ceramics of these two traditions, at least, suggests that Black Sand tradition components in interior eastern Iowa may not have been limited to prairie-dominated environments.

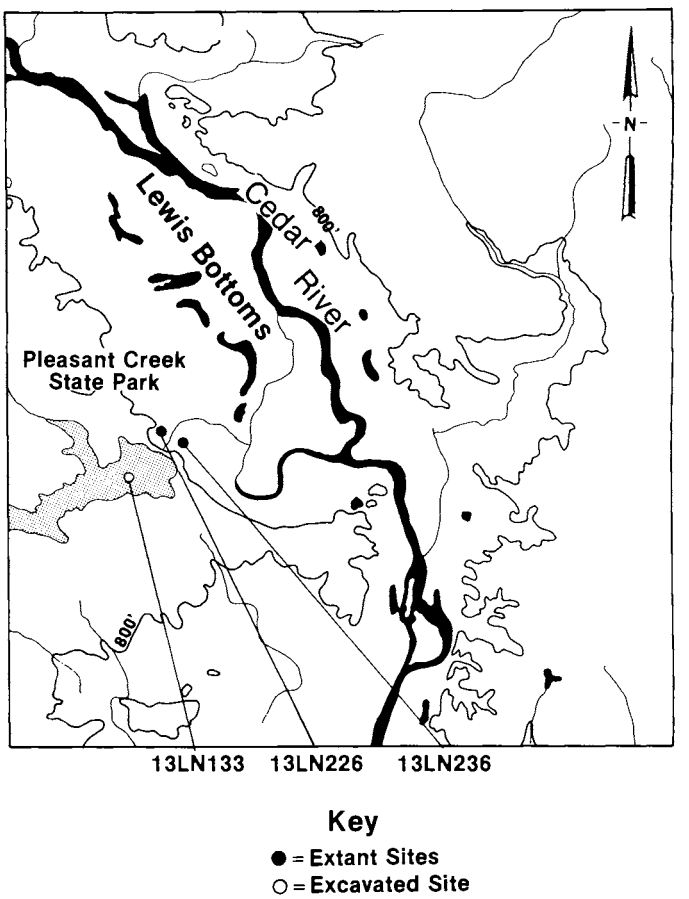

Fig. 2. Topography of the Pleasant Creek Lewis Bottoms locality, showing selected archaeological sites. From U.S.G.S. Linn County Topographic Map, 1985. Scale = 1:100,000.

RECENT LINN COUNTY INVESTIGATIONS

Recent research in the Lewis Bottoms, located below Pleasant Creek Reservoir, has further illuminated the nature of the Havana tradition occupation in the Cedar valley. Located in northwestern Linn County, the Pleasant Creek/Lewis Bottoms locality includes the uplands drained by Pleasant Creek and several other minor tributaries, and the adjacent bottomland along the Cedar River (Figure 2). The uplands are typical of the scattered drift plain "inliers" found on the Iowan Erosion Surface, consisting of loess-capped hills bearing pre-Illinoian glacial drift (Ruhe et al. 1968). The uplands were historically forested and well dissected by intermittent drainageways. The area known locally as the Lewis Bottoms is a broad alluvial plain displaying extensive Wisconsinan and early Holocene terraces as well as younger, lower-lying, late Holocene floodplain features such as oxbow lakes, aban-

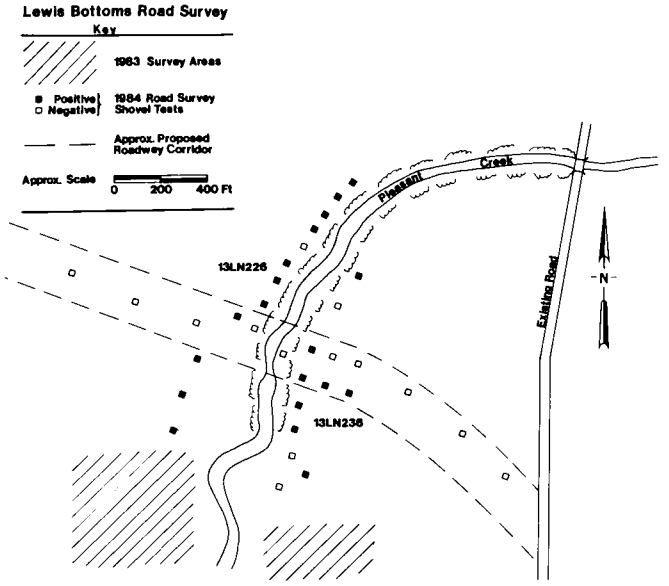

Fig. 3. Sketch map of 13LN226 and 13LN236, showing approximate shovel test locations.

doned channels, and meander scars. The prairie-dominated terraces are cut by tributaries of the Cedar, and the largest of these, Pleasant Creek, has carved a channel some 50-60 m in width and 8-10 m in depth. Bottomland forests covered the late Holocene floodplain and extended up the tributary channels.

The proposed reconstruction of Lewis Bottoms Road provided the opportunity for a transect survey of the Lewis Bottoms in the fall of 1983 (Perry 1983). With the exception of a survey of two proposed sewage lagoons at the mouth of Pleasant Creek (Benn 1983), the Lewis Bottoms had escaped the survey efforts of earlier investigators. Site 13LN226 was recorded during the sewage lagoon survey, occupying a portion of a broad early Holocene terrace drained by Pleasant Creek. At the Pleasant Creek crossing for the road corridor, remains associated with 13LN226 were relocated. A second site, designated 13LN236, was encountered on the terrace opposite Pleasant Creek.

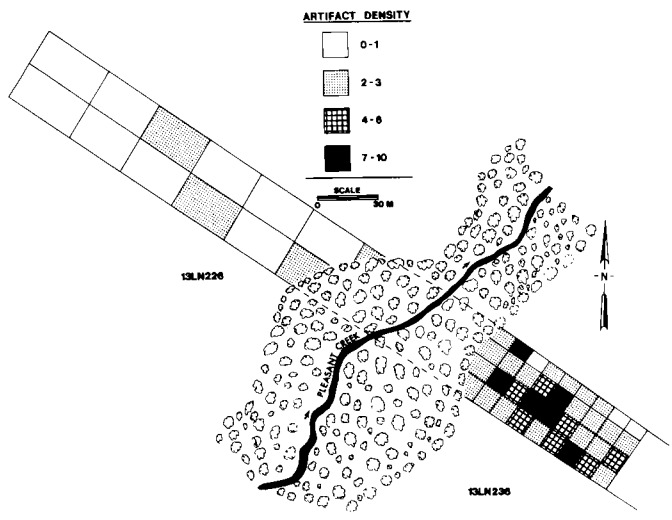

Fig. 4. Density plots of surface artifacts at 13LN226 and 13LN236.

The Phase I investigation of these two sites involved the excavation of shovel tests scattered along the margins of the Pleasant Creek channel (Figure 3). The shovel tests at 13LN226 yielded 67 lithic and ceramic artifacts from both plowzone and subplowzone contexts (Table 1). A thick Linn ware rim sherd decorated with incised cross-hatching was recovered at 13LN226, allowing the identification of a late Middle Woodland period component. Thirty-three specimens were recovered from the 13LN236 shovel tests, also occurring in both plowzone and subplowzone excavation levels (Table 2). Grit-tempered body sherds from the 13LN236 shovel tests indicated the presence of a generalized Woodland period component.

Phase II test excavations were carried out at both sites during the summer of 1985 (Perry 1985). These efforts included controlled surface collections, test unit excavations, and plowzone stripping using a road grader. All the Phase II testing procedures were conducted within the proposed road corridor. The controlled surface collections revealed that artifacts were considerably more numerous at 13LN236 than at 13LN226. The difference in artifact density between the two sites is apparent from the density plot prepared from the surface collection data (Figure 4). Test unit (1 x 1 m and 1 x 2 m) excavations supported the surface collection data, with generally much lower artifact frequencies occurring in the 13LN226 test units than in the 13LN236 test units (Tables 1 and 2).

At 13LN226, 73 (45%) of the 161 specimens recovered during the Phase II testing were identified as thinning flakes of Maynes Creek Cream chert (Morrow 1984) that occurred in one test unit, indicating the presence of a small flintknapping station. The remainder of the artifacts appeared to be thinly scattered, making interpretations of site formation and site function difficult. Diagnostic specimens recovered during the Phase I and II testing at 13LN226 are limited to the crosshatched Linn ware rim sherd, corresponding Linn ware body sherds, and a Late Woodland or Late Prehistoric period arrow point.

A number of diagnostic specimens were recovered from the Phase II testing at 13LN236. Use of the site during the Archaic period was revealed by two projectile points resembling Helton and Turin types (Cook 1976; Anderson 1980). Havana tradition diagnostics included a flake blade, two corner-notched projectile points (one complete and one fragmentary), and Havana ware sherds including a dentate stamped body sherd and a thick, square-lipped rim sherd (Figure 5). A crosshatched rim sherd with exterior punctates also was recovered. The specimen apparently represents a locally produced Hopewell ware or Baehr ware imitation, since it is quite thick and lacks both limestone tempering and an interior rim channel, distinguishing it from classic

Table 1. Summary of Phase I and Phase II artifacts from 13LN226.

Context	WF	SH	CR	MF	RS	BS	PP	BF	IR	Total
Phase I Shovel Tests										
Plowzone	28	3	-	1	-	7	-	-	5	44
Subplowzone	14	1	-	-	1	4	-	-	3	23
Phase II Surface Collection	16	1	-	2	-	-	1	2	15	37
Phase II Test Units										
Plowzone	17	-	-	1	-	1	-	2	2	23
Subplowzone	93	1	-	-	-	-	-	-	3	97
Phase II Stripped Areas	-	-	2	-	-	-	-	-	2	4
Total	168	6	2	4	1	12	1	4	30	228

Key:
WF = Waste Flake
SH = Shatter
CR = Core
MF = Modified Flake
RS = Rim Sherd
BS = Body Sherd
PP = Projectile Point
BF = Bone Fragment
IR = Introduced Rock

Table 2. Summary of Phase I and Phase II artifacts from 13LN236.

Context	WF	SH	CR	MF	FB	BFF	PP	IR	RS	BS	BF	Total
Phase I Shovel Tests												
Plowzone	7	2	-	1	-	-	-	4	-	1	-	15
Subplowzone	11	1	-	-	-	-	-	4	-	2	-	18
Phase II Surface Collection	99	7	1	18	-	1	1	15	-	1	4	147
Phase II Test Units												
Plowzone	67	4	-	1	-	-	-	28	-	7	-	107
Subplowzone	53	6	-	3	-	-	1	26	2	19	-	110
Phase II Stripped Areas	7	4	-	-	1	1	2	32	-	3	-	50
Total	244	24	1	23	1	2	4	109	2	33	4	447

Key:
WF = Waste Flake
SH = Shatter
CR = Core
MF = Modified Flake
FB = Flake Blade
BFF = Biface Fragment
PP = Projectile Point
IR = Introduced Rock
RS = Rim Sherd
BS = Body Sherd
BF = Bone Fragment

Hopewell ceramics. The Havana component probably dates to the late Middle Woodland period, ca. A.D. 200 (Perry 1985:29; David Benn, personal communication 1988).

Lithic debitage, including waste flakes, shatter, and one core, comprised 248 (60%) of the 414 total specimens recovered during the Phase II testing at 13LN236. Introduced rocks were also frequent, with 101 (24%) specimens. Grit-tempered, undecorated body sherds, modified flakes, biface fragments, and unidentifiable bone fragments comprised the remainder of the Phase II assemblage. Paste characteristics of the body sherds, and thickness measurements on sherds with intact exterior and interior surfaces, fall within the range of Havana and Linn ware ceramics.

Evidence for stratification of the Archaic and Woodland period components was not revealed by the Phase II investigation of 13LN236. However, it is considered likely that Archaic period use of the site was limited to brief episodes involving resource extraction that left few surviving archaeological remains. Most of the non-diagnostic artifacts from 13LN236 may therefore be associated with the Middle Woodland period remains.

Flakes modified through retouch or use wear were relatively frequent at 13LN236, and the association of the corner-notched points and two biface fragments suggests an emphasis on processing tasks involving cutting and scraping. Most waste flakes were thinning flakes, indicating that flintknapping activities at the site focused on tool manufacturing using previously prepared blanks and preforms, and on maintenance of worn or broken tools. Dense midden accumulations and features such as storage/refuse pits or post molds, characteristics of residential sites occupied for extended time periods, were not encountered in the test excavations or in an approximately 810 m^2 area stripped of plowzone soil by a road grader. These factors support a functional interpretation of the site as a short-term processing camp during the Middle Woodland period. Identified as a field camp (Binford 1980), the site was utilized by small, task-oriented groups engaged in the extraction and processing of resources associated with the bottomland environment along Pleasant Creek. Such groups probably maintained more permanent residences elsewhere. It is likely that field camps such as 13LN236 would have been occasionally reoccupied. Assuming a random distribution of bottomland flora and fauna along the length of the channel, any point along the terrace margin on both sides of the creek would have provided equal access to targeted resources. Thus successive occupations may not have occurred at the same locus, resulting in a linear arrangement of debris clusters paralleling the Pleasant Creek channel, representing the remains of more or less overlapping occupational episodes.

The diffuse, low-density nature of the remains at 13LN226, in sharp contrast with 13LN236, is problematic. Either more dense artifact clusters are present beyond the focus of the Phase II testing, or activities at the site were extraction-oriented, and left few remains to survive in the archaeological record. In any case, the Lewis Bottoms Road survey demonstrated that the Havana tradition settlement system in the Cedar valley included field camps within the main valley, complementing nearby residential bases in the surrounding uplands. The results of the various research efforts in the Pleasant Creek-Lewis Bottoms locality suggest that Havana tradition components in the Cedar valley may be present in areas of high environmental diversity, as reflected by dissected, forested uplands, broad prairie-covered terraces,

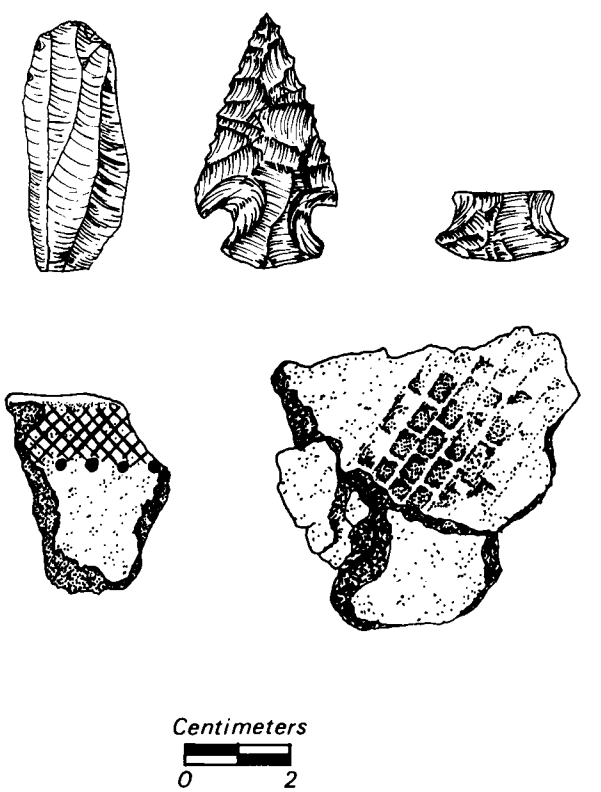

Fig. 5. Diagnostic Middle Woodland artifacts recovered at 13LN236.

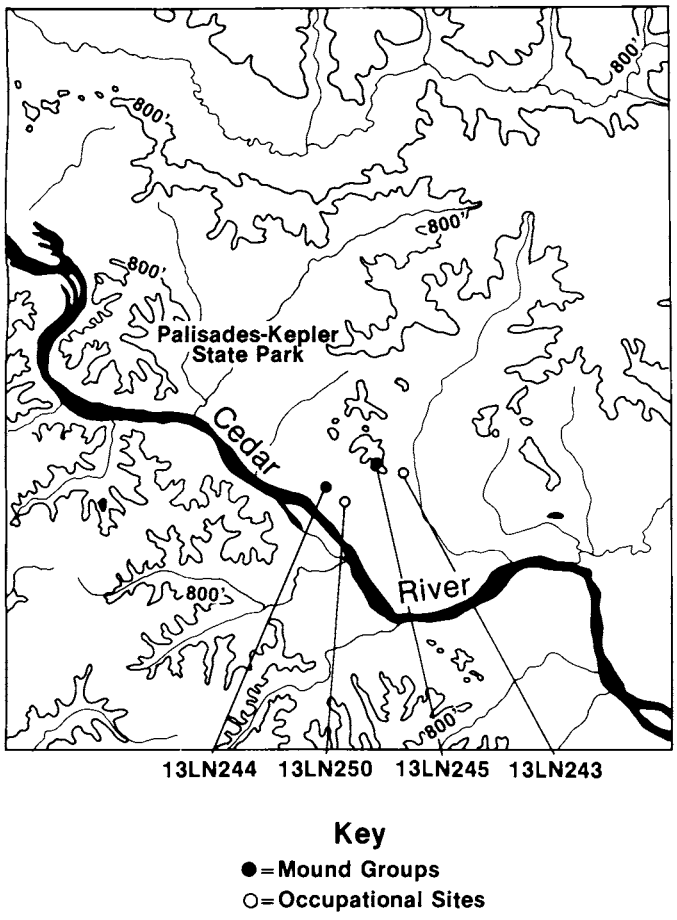

Fig. 6. Topography of the Palisades Ivanhoe Bottoms locality, showing selected archaeological sites. From U.S.G.S. Linn County Topographic Map, 1985. Scale = 1:100,000.

and extensive ravine landforms and vegetation (cf. Tiffany and Abbott 1982). Roper (1979) reports similar environmental characteristics for Middle Woodland sites in the Sangamon River valley in central Illinois.

The Ivanhoe Bottoms, located just downstream from Palisades-Kepler State Park, presents an environmental setting similar to that of the Pleasant Creek-Lewis Bottoms locality (Figure 6). An initial survey of the Ivanhoe Bottoms, conducted for a proposed bridge replacement project, resulted in the location of a number of mound and occupation sites (Bakken 1986). A supplemental survey included extensive shovel testing at 13LN243, located on a loess-mantled terrace adjacent to an unnamed Cedar River tributary (Perry 1989). The shovel tests yielded 114 artifacts: 103 specimens of lithic debitage, five introduced rocks, two charcoal fragments, one rim sherd, one boyd sherd, and two historic period artifacts (Table 3). Six specimens also were recovered from a cutbank along the channel of the unnamed tributary where it is eroding into the eastern margin of the site (Figure 7, Table 3). Most of the artifacts recovered during the supplemental survey occurred in shovel tests placed in a pasture-covered portion of the site bordering the stream channel. The shovel tests revealed that the pasture had not been disturbed by past cultivation. All but three of the specimens recovered from the shovel tests placed in the cultivated portion of the site occurred in the plowzone.

The distribution of positive shovel tests at 13LN243 suggests that the site consists of a roughly linear scatter of debris bordering the

Table 3. Summary of Phase I artifacts recovered from 13LN243.

	WF	SH	RS	BS	CH	IR	HA	Total
Surface	3	1	-	-	-	1	-	5
Pasture Area								
Shovel Tests	83	3	1	1	2	5	2	97
Plowed Area								
Shovel Tests	14	3	-	-	-	-	-	17
Total	100	7	1	1	2	6	2	119

Key:
WF = Waste Flake
SH = Shatter
RS = Rim Sherd
BS = Body Sherd
CH = Charcoal
IR = Introduced Rock
HA = Historic Artifact

terrace margin, characteristic of field camps (Figure 7). As in the Lewis Bottoms area, artifact density diminished as distance from the creek increased, and the distribution of artifacts along the terrace margin paralleling the creek suggests the presence of clusters of remains representing short-term occupations.

Diagnostic artifacts at 13LN243 are limited to Linn ware ceramics, suggesting the presence of a single, late Middle Woodland component. The recovered rim sherd bears incised cross-hatching on a thickened upper rim band (Figure 8). The decoration on the 13LN243 rim sherd is reminiscent of Hopewell and Baehr ceramics from the Mississippi and Illinois valleys. Following Anderson (1971b:37) and Caldwell (1961:132), the production of Linn ware ceramics with such features may well reflect the influence of Havana-related populations. Keyes recovered similar specimens at several of the rockshelters in the nearby Palisades locality, but Logan curiously left these specimens untyped (Logan 1976:59, 62, 98). Similar specimens also were recovered at the Young site at Pleasant Creek Reservoir (Benn with Thompson 1977:41, 44, 46), the Sandy Beach site (13JH43) in the Coralville Reservoir (Anderson 1971a:20), and at Horsethief Cave (13JN8) in Wapsipinicon State Park (Keyes n.d.). A variant of this cross-hatching

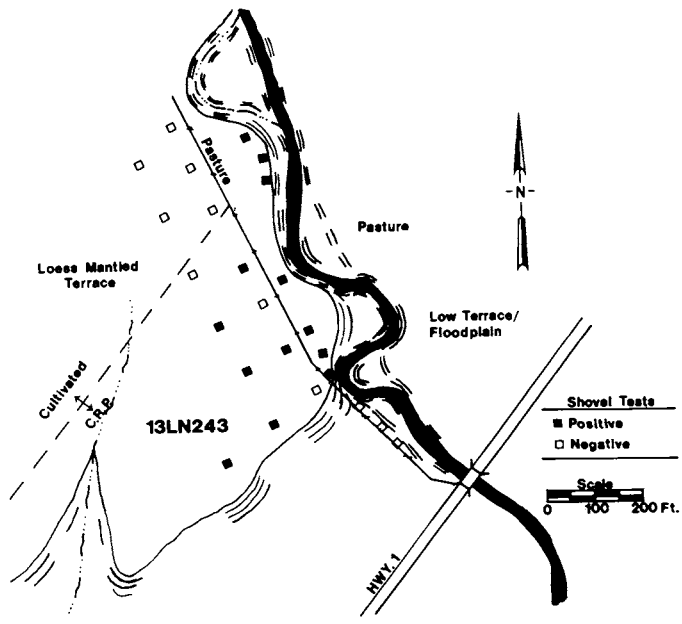

Fig. 7. Sketch map of 13LN243, showing approximate shovel test locations.

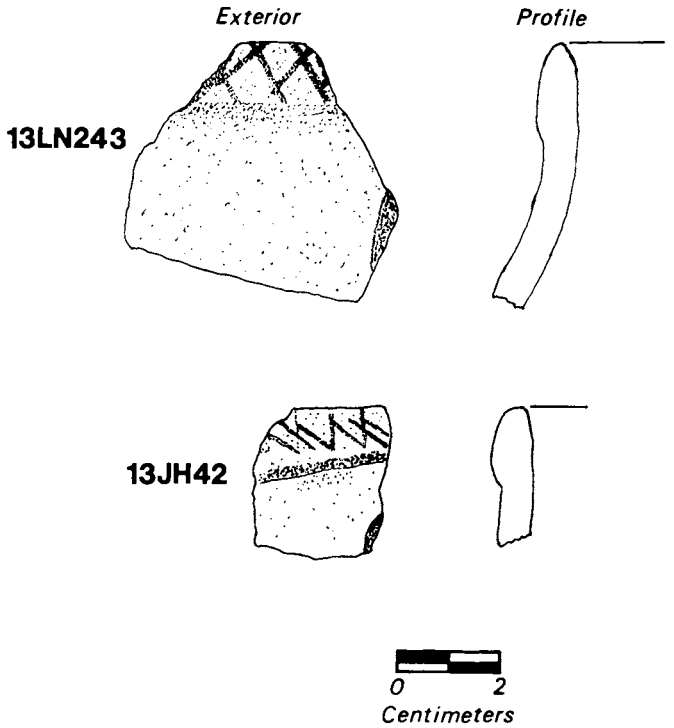

Fig. 8. Examples of Spring Hollow Crosshatched rim sherds.

is represented by the use of vertical and diagonal incisions (Figure 8) found on sherds from the Walters site (13JH42), also in the Coralville Reservoir (Anderson 1971b:46). The number of crosshatched Linn ware rim sherds has thus reached a level sufficient to justify formal classification within the Linn ware series, and the term Spring Hollow Crosshatched seems appropriate. Figure 9 shows the distribution of sites in eastern Iowa that have yielded Spring Hollow Crosshatched rim sherds.

Eleven rim sherds were analyzed to provide the following description of the characteristics of Spring Hollow Crosshatched. The specimens included three rim sherds (one vessel) from Minott's Rockshelter (13LN210), three rim sherds (one or two vessels) from Spring Hollow Rockshelter II (13LN212), and one rim sherd each from the Walters site, the Sandy Beach site, Horsethief Cave, 13LN226, and 13LN243. Six of the 11 specimens displayed the fine-textured, compact paste typical of Linn ware vessels. The temper consisted of angular grit, but amounts varied from low to profuse. Sherds with coarse-textured paste had greater amounts of temper. The interior and exterior surfaces of all specimens were completely smoothed. Ten specimens displayed rounded lips. Spalling on the interior lip-rim juncture of the 13LN226 specimen prevented lip form determination. All specimens displayed a vertical rim form and lacked an interior rim channel, but the characteristic upper rim thickening and smooth, gentle curve to a slight shoulder provided these sherds with a shallow S-shaped profile. None of the specimens was large enough to determine body form, but elongated jars with conoidal or rounded conoidal bases, typical of Linn ware vessels, are suggested. Four rim sherds were large enough to estimate vessel orifice diameters, yielding a range of approximately 17.5 cm to greater than 25 cm. Vessel wall thickness measurements are presented in Table 4.

Decoration was limited to incised cross-hatching on the thickened upper rim exterior. The crosshatched band ranged 10-15 mm in width and extended to the lip on all specimens. Spacing between the incised lines ranged from 4 to 11 mm, with the exception of the Walters site specimen. The incised diagonals on the Walters site rim sherd were 2-3 mm apart, while the vertical incisions were 6-7 mm apart. Spring Hollow Crosshatched is similar to Baehr and Pike ceramics of the Illinois and Mississippi valleys in that vessel size was relatively large, and comparable decorative elements rather carelessly applied were used (Griffin 1952:119-120). The known geographic range of Spring Hollow Crosshatched in Iowa is limited to the Iowa, Cedar, and Wapsipinicon valleys in Johnson, Linn, and Jones counties. These ceramics are considered to be late Middle Woodland in age, dating ca. A.D. 200-300.

Table 4. Thickness measurements (mm) on eleven Spring Hollow crosshatched rimsherds.

Location	Number	Range	Mean	Standard Deviation
Lip	10	3.3-5.8	4.6	.79
Upper Rim	11	7.5-11.6	9.8	1.77
Lower Rim	11	6.1-9.4	7.4	1.06
Upper Shoulder	6	6.2-8.6	7.8	1.00

DISCUSSION

Regarding the distribution of Havana and Black Sand tradition sites in Iowa, Alex's (1970) description of the environmental characteristics of the Havana tradition sites known at that time was basically correct, although resource diversity may be a more precise predictor of site location at the local level. His model suffers in its oversimplication of the environments of the major river basins of east-central Iowa. The valleys of the Iowa, Cedar, and Wapsipinicon do indeed display broad, low-relief, prairie covered regions which may well have housed Black Sand tradition populations, but major sections of these valleys also contain just the kind of dissected, heavily forested environments that Alex said were preferred by eastern Iowa's Havana-related populations. Iowa's original forest cover map (Iowa State Planning Board 1935) (Figure 10) reveals the extensiveness of the forests along certain reaches of these rivers. The Pleasant Creek/Lewis Bottoms locality provides an excellent example of the environmental context for Havana tradition settlements in interior eastern Iowa. Future surveys of such areas will undoubtedly result in the location of more Havana tradition components. As more sites are located and investigated, and the nature of Middle Woodland culture in interior eastern Iowa becomes clearer, perhaps the enigmatic "Amana Havana" construct will be replaced by more firmly grounded integrative units.

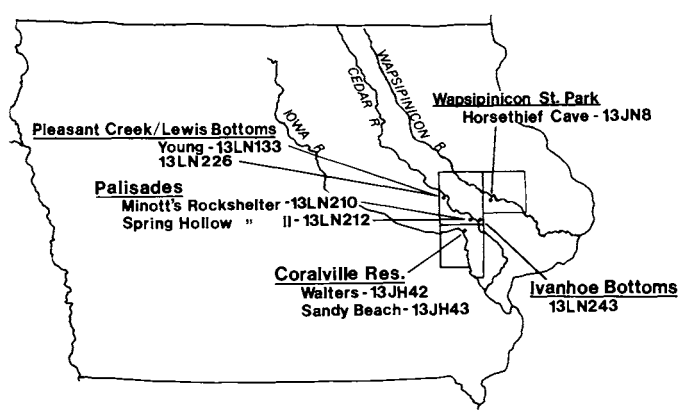

Fig. 9. Distribution of sites yielding Spring Hollow Crosshatched rim sherds.

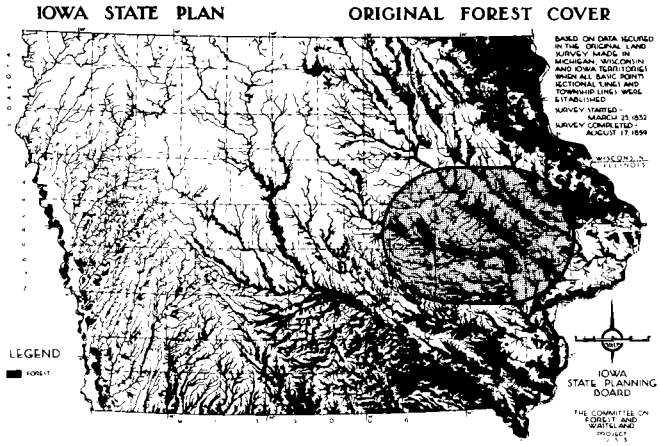

Fig. 10. Copy of Iowa's Original Forest Cover Map with heavily forested sections of the Iowa, Cedar, and Wapsipinicon valleys shaded.

Settlement pattern research in the Illinois River valley indicates that a variety of site types characterize Havana-Hopewell occupational centers. Site types described by Struever (1968) include large villages with associated mortuary ceremonial sites such as large, elaborate burial mounds, charnel houses, and mortuary camps, and floodplain-oriented field camps. The mortuary ceremonial components of the classic Havana-Hopewell settlement system represent the archaeological manifestations of activities related to the preparation and interment of deceased individuals who occupied positions of prestige within a hierarchically ordered society (Braun 1979). While mound groups are common in the major river valleys of interior eastern Iowa, sites reflecting the elaborate mortuary ceremonial behavior characteristic of the Illinois Havana-Hopewell tradition have not been recognized, suggesting that the Havana tradition in interior eastern Iowa did not achieve the level of social complexity evident in the Illinois and Mississippi valley sites.

The location of field camps on high terraces adjacent to a small tributary stream, while residential bases were situated in upland settings overlooking a major river valley, as revealed by the Pleasant Creek/Lewis Bottoms investigations, distinguishes the Havana tradition settlement pattern in this locality from its Illinois and Mississippi valley counterparts. Havana-Hopewell villages in the Illinois and Mississippi valleys were located in bluff base positions to maximize access to food resources associated with a variety of upland, floodplain, and aquatic environments exploited by the use of extractive camps (Struever 1968). The Pleasant Creek/Lewis Bottoms data may not reflect the full range of Havana tradition settlement types in interior eastern Iowa, but suggest that resource exploitation may have focused on a more limited range of habitats. A better understanding of Havana tradition subsistence and settlement systems must await further survey and excavation data.

The rockshelters of Jackson County have yielded the highest quantities and greatest variety of Havana ware sherds in interior eastern Iowa (Logan 1976:92-93, 105-107). Havana ware in the open sites of the Pleasant Creek/Lewis Bottoms locality seems to be limited to dentate stamped specimens of the Naples or perhaps Havana Zoned varieties. Benn and Rogers (1985:46) noted a similarly limited range of types in the Havana-like Van Hyning phase ceramics of the central Des Moines Valley, and Benn (1987:60) suggests that this limited range of types and decorative treatments may hold for most Havana-related sites in interior eastern Iowa.

Logan (1976:177) notes that elements of Hopewellian culture appear to have been selectively adopted in interior eastern Iowa. The diffusion of Hopewellian traits is considered to have occurred through participation in the Hopewell Interaction Sphere. Struever (1964:88) defines the Hopewell Interaction Sphere as the logistics network within which stylistic and ideological concepts were disseminated, and exotic raw materials such as copper, mica, obsidian, and marine shell were traded into the Hopewellian centers of Illinois and Ohio. Regarding the adoption of Hopewellian stylistic forms by participants in the interaction sphere, "it is clear from the evidence that considerable local reinterpretation of diagnostic Hopewell artifact forms . . . occurred" (Struever 1964:88). Spring Hollow Crosshatched is an example of local reinterpretation of the Hopewell pottery style by interior eastern Iowa potters, who employed the salient decorative features of Hopewell pottery in the production of early Linn ware vessels.

Recognition of the type Spring Hollow Crosshatched as an example of Linn ware with Hopewellian decorative features raises the question of the relationship between Havana-Hopewell pottery and Linn ware in the development of eastern Iowa ceramics. Linn ware is generally recognized as having been derived from Havana ware in northeastern Iowa and southwestern Wisconsin (Logan 1976:128; Stoltman 1979:136-137; Benn 1980:98). The shift from Havana ware to Linn ware in northeastern Iowa ceramics is readily evident in the Spring Hollow Crosshatched rims analyzed for this paper, appearing as a gradation between the specimens with coarse-textured paste and greater vessel wall thickness to those with thinner walls and fine-textured, compact paste.

Further evidence for the gradational shift from Havana ware to Linn ware was noted in a cursory examination of sherds from the Levsen Rockshelter in the Sagers Collection, currently undergoing curatorial preparation and restoration at the Office of the State Archaeologist of Iowa (Cordell and Green 1991). Typical Naples type Havana ware rims, rivaling any from the Illinois and Mississippi River valleys, graded to specimens with Naples Stamped decorative motifs placed on thin-walled vessels with Linn ware paste, to the type specimens used by Logan (1976:93-97) to define the types Levsen Stamped and Levsen Punctated within Linn ware. Notably, several Linn ware sherds with Naples Stamped-style and Levsen Stamped decoration displayed interior rim channels, a characteristic of Hopewell vessels which apparently parallels the use of Hopewellian features in Spring Hollow Crosshatched. This situation also appears to be analagous to the carryover of brushed decoration from late Hopewellian Baehr ware into Spring Hollow Brushed, as recognized by Logan (1976:129), and perhaps of rocker stamped decoration and interior rim channeling from certain Hopewell ware varieties into Lane Farm Stamped and Lane Farm Cord Impressed (Logan 1976:100).

Figure 11 presents an updated model of the chronological and developmental relationships of eastern Iowa Woodland ceramics. The model incorporates recently proposed changes in ceramic typology and nomenclature (Benn 1987; Perry 1987; Stoltman 1979, 1989), as well as the newly proposed type Spring Hollow Crosshatched. The Havana-Hopewell ceramics grade into Linn ware via such transitional types as Levsen Stamped and Spring Hollow Crosshatched in northeastern and east-central Iowa. In southeastern Iowa the shift away from Havana Hopewell is marked by Weaver ware along the Mississippi trench (Benn 1987) and Henry ware along the lower Des Moines and Skunk Rivers (Perry 1987). The cord/fabric impressed wares of northeastern Iowa develop from Linn ware, with Lane Farm Cord Impressed viewed as a precursor to the late Late Woodland wares. In southeastern Iowa the cord/fabric impressed ceramics are represented by Maples Mills pottery, with antecedents in Weaver and/or Henry wares, and similarities in the contemporary northeastern Iowa types. The ceramics of the Black Sand tradition are considered to be primarily limited to the Early and Middle Woodland periods. It is uncertain whether the populations producing these ceramics were absorbed or displaced by Havana- and Linn-related populations, a problem that must await future research in interior eastern Iowa.

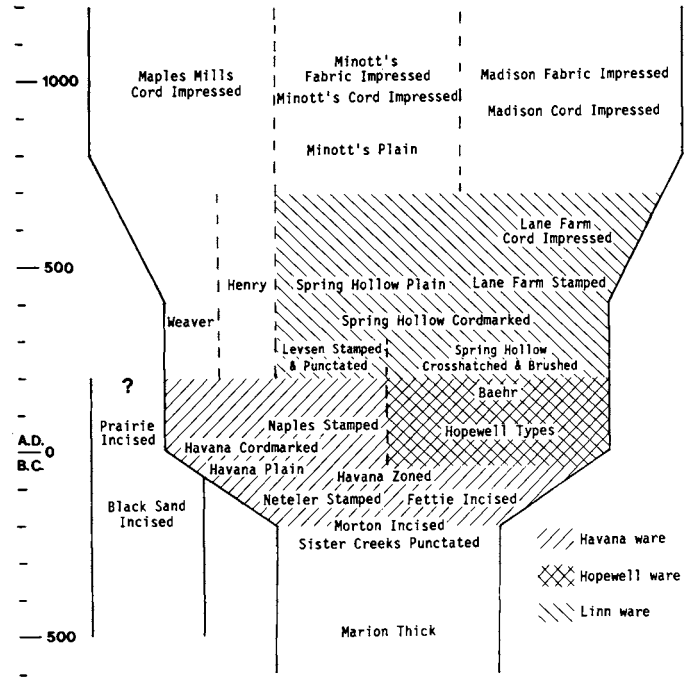

Fig. 11. Model of chronological and developmental relationships of eastern Iowa Woodland ceramics.

SUMMARY

The results of cultural resource management efforts over the past 10-15 years for road reconstruction and other public works projects demonstrate that archaeological research in the Cedar valley is just as productive today as it was for Keyes in the 1920s and 1930s. The road corridor surveys in the Lewis Bottoms and Ivanhoe Bottoms localities indicate that field camps are components of settlement systems used by both Havana tradition populations and later Linn ware producing populations. Ceramics associated with the sites investigated during these surveys have added to our understanding of the relationship between Linn ware and Havana ware by the recognition of a newly defined ceramic type which is likely to have been among the earliest types of Linn ware produced in eastern Iowa.

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